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TRADE IN HEALTH PRODUCTS: REDUCING TRADE BARRIERS FOR BETTER HEALTH

Matthias Helble and
Benjamin Shepherd

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Matthias Helble is a research economist at the Asian Development Bank Institute. Ben Shepherd is the principal of Developing Trade Consultants.

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Please contact the authors for information about this paper.

Email: mhelble@adbi.org; ben@developing-trade.com

Asian Development Bank Institute
Kasumigaseki Building, 8th Floor
3-2-5 Kasumigaseki, Chiyoda-ku
Tokyo 100-6008, Japan

Tel: +81-3-3593-5500
Fax: +81-3-3593-5571
URL: www.adbi.org
E-mail: info@adbi.org

Abstract

Trade in health products has been flourishing in recent years as the demand for better health has been growing throughout the world. At the same time, trade in health products is hampered by substantive trade barriers. In this paper, we present evidence that countries around the world still apply tariffs and nontariff measures that increase prices and limit the availability of health-related products such as pharmaceuticals, vaccines, and medical equipment. The case for liberalizing trade in these products is therefore strong. In addition, we show that improving trade facilitation performance, using the World Trade Organization's Trade Facilitation Agreement as a starting point, can be linked to improved handling of health-related products such as vaccines which, in turn, would boost usage. In the last part of the paper, we study the price differences for insulin across countries. We observe that the price of insulin has various determinants, one of them being open trade: the higher the level of competition between manufacturers, the lower the price of insulin. In summary, lowering trade barriers on health products can make a substantive contribution to building up health systems and lowering out-of-pocket payments of patients.

JEL Classification: F14, I11, I15, I18

Contents

1. INTRODUCTION

Trade economists have long argued the case that increased openness to international markets can, under the right circumstances, boost productivity, which is the backbone of sustained growth in per capita incomes. The distribution of the gains from trade in a way that conforms to each society's view of equity is an issue best addressed by complementary policies such as welfare and social safety net measures. But the experience of many developing countries suggests that trade can be an important part of promoting economic growth, which can help reduce poverty. Trade is therefore intimately linked to Sustainable Development Goal (SDG) 1 which relates to ending poverty, and SDG 8 which relates to promoting sustained, inclusive, and sustainable economic growth. The relationship between trade and growth is not as simple and direct as was believed by some commentators in the 1990s, but there is a broad consensus that without openness to international markets for goods, services, labor, and capital, it is difficult, if not impossible, to bring about rapid economic growth and development.

The motivation for this paper is not, however, to delve further into the links between trade and economic outcomes, such as growth and poverty reduction. Instead, it examines the ways in which openness to trade can help improve development outcomes other than through channels such as income and productivity. It focuses specifically on the case of health. The intuition is simple: trade openness reduces prices and increases access and variety for consumers. The point holds just as strongly for products that are important for health-related development outcomes as it does for consumer goods. This paper makes a case for priority liberalization of trade policies affecting "development products" such as those used in health services. It argues that trade can, and should, play a role in attaining SDGs other than 1 and 8, in particular SDG 3: ensuring healthy lives and promoting well-being for all ages.

Trade and health is an issue that has been extensively examined over the last 10–15 years. However, that discussion has focused largely on the issue of intellectual property rights. Trade agreements now routinely include chapters on protection of intellectual property rights. At the World Trade Organization (WTO), the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS Agreement) lays down minimum standards for protection in member states. Pharmaceuticals are a product where intellectual property issues loom large from a development standpoint, because there could be a conflict between promoting innovation on the one hand, and extending access to crucial medications on the other. Indeed, many developing countries were so concerned about this conflict in the context of the AIDS epidemic that they successfully campaigned for the 2001 Declaration on TRIPS Agreement and Public Health.

Another aspect of trade and health that has received considerable attention is the trade in health services. Trade in health services can be delivered in all four modes of supply, as defined by WTO's General Agreement on Trade in Services. One of the most prevalent forms of trade in health services is by medical travel, i.e., when a patient seeks medical treatment abroad. The focus of this paper is on trade of all physical goods that enter the health sector. These goods are either those that can be used directly for diagnosis and treatment of patients or those that are necessary for testing and medical research.

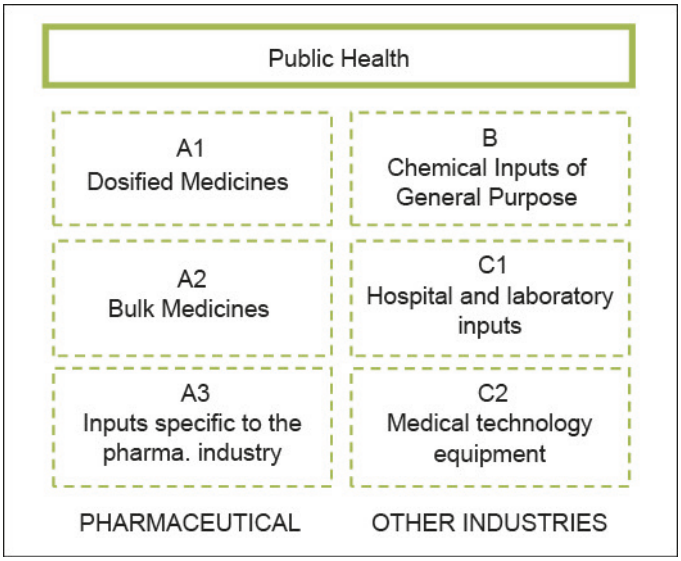
The paper proceeds as follows. Section 2 first shows how international trade in health products has evolved in recent years. It then outlines trade policies affecting six core groups of health-related products, and identifies their effects on the world's poor. Section 3 examines the special case of vaccines, and reports on an econometric analysis that establishes the important role of logistics services—which are traded internationally—in promoting access. Section 4 presents evidence from the world market for insulin, a crucial product in the management of diabetes. The final section concludes, and addresses policy implications.

2. TRADE AND TRADE POLICIES IN HEALTH PRODUCTS

In terms of economic mechanisms, the most obvious linkage between trade and health is on the consumption side. We know that health expenditures around the world have been increasing rapidly, especially in fast-growing economies. According to general principles, open trade can facilitate the access of health-care providers or patients to health products at competitive prices, and in new varieties.

Helble (2012) maps out the "universe" of health products covering 207 subheadings of the Harmonized System (HS). The list consists of products in three groups: (i) medicines, (ii) chemicals used in the production of pharmaceuticals, and (iii) hospital and laboratory inputs and equipment (Figure 1). This "universe" of health products consists of a carefully selected list. However, as stated by the author, the list is only an approximation of the full trade. Some subheadings might include products that are not only used in the public health domains, such as syringes used in medical, surgical, dental, or veterinary sciences (HS 901831). On the other hand, the author excludes where the subheading captures products that are, in the majority, non-health related. For example, malaria bed nets fall under HS 630493: "Not knitted or crocheted, of synthetic fibers; articles for interior furnishing, or synthetic fibers." Despite these caveats, analyzing international exchanges in these health products gives us important insights into the role of trade for public health.

Figure 1: Product Groups Related to Public Health

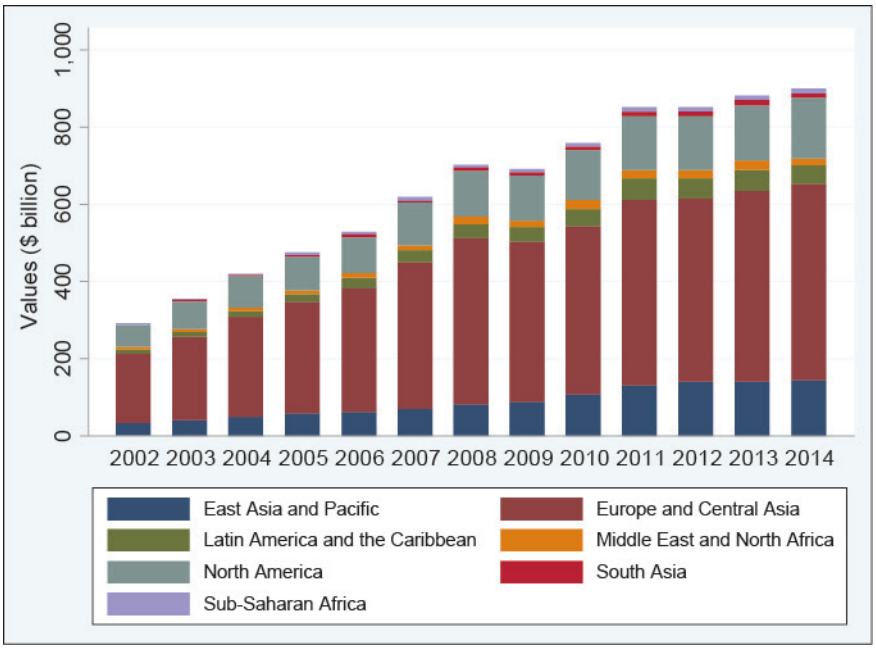


Source: Helble (2012).

2.1 International Trade of Health Products

First, we study the evolution of world trade in all health products since 2002. We therefore download all imports in health products reported by 201 countries. Figure 2 depicts the evolution of international trade of health products since 2002 by world region (World Bank classification of world regions). Overall, we observe that international trade in health products increased rapidly. The biggest trader of health products is region Europe and Central Asia. North America is the second-largest market for health products. However, developing countries have been expanding their role as a provider of health products.

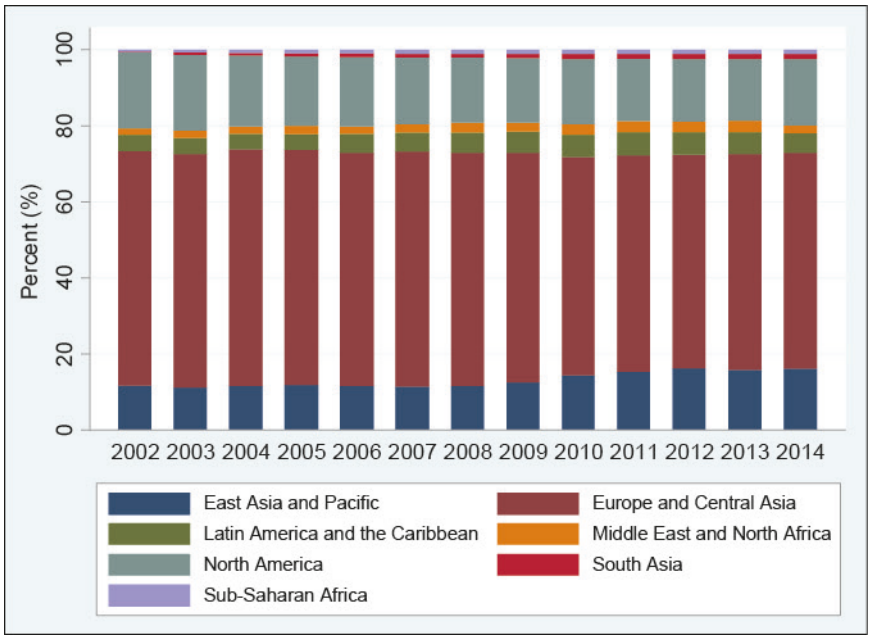
Figure 2: Trade in Health Products 2002–2014 by Region
(measured by imports reported by countries)



Source: Authors.

Figure 3 shows the relative shares of the seven world regions. Europe and Central Asia as well as North America account for the lion's share in international trade in health products. However, their combined share fell from 81.9% in 2002 to 74.0% in 2014. As a corollary, the shares of regions with developing countries rose steadily. The share of East Asia and the Pacific increased from less than 11.7% in 2002 to 16.0% in 2014. The relative increase was largest in South Asia (from 0.1% to 1.5%) and Sub-Saharan Africa (from 0.6% to 1.2%). Despite the considerable expansion of the market shares of developing countries, one should not forget that the developing countries also have by far the largest needs. If we take the Organisation for Economic Co-operation and Development (OECD) membership as a benchmark for the level of economic development, we know that the population share of non-OECD countries was about 83% of the world in 2014; however, the imports of health products only amounted to 24%. The example of South Asia illustrates this point. Even though South Asia represents 24% of the world population, it only absorbs 1.5% of internationally traded health products. There is, of course, a significant production of some health products in that region, but substitution of local production for imports could result in higher prices or reduced access to high-quality varieties in some cases.

Figure 3: Shares of Trade in Health Products 2002–2014 by Region
(measured by imports reported by countries)



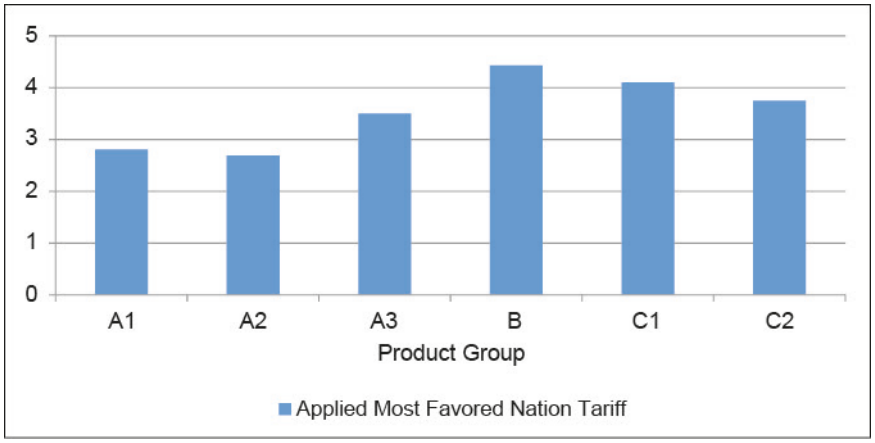
Source: Authors.

2.2 Tariffs on Health Products

Tariffs and nontariff measures (NTMs) restrict access to health products. Tariffs are relatively easy to measure as they are reported to international bodies, including the WTO. In contrast, comparable international records on NTMs are sparse. Yet, NTMs play an important role for health products. Developed countries, in particular, have stringent standards for medicines and other health products. It is important to emphasize at the outset that although some NTMs, such as quality controls, can have important public benefits that justify their use, the same cannot be said of tariffs. Tariffs simply transfer income from consumers to local producers and the government, with an additional cost in economic efficiency. There is no public policy objective, such as consumer protection, that is achieved by tariffs. Conceivably, there could be an argument that, in order to promote infant industries in developing countries, it is important to protect producers of health products. However, that position has proved problematic in historical context, as infants rarely "grow up." In addition, it is difficult, from a development perspective, to accept that promotion of a particular domestic industry trumps the public health objective of ensuring maximum possible access to health products.

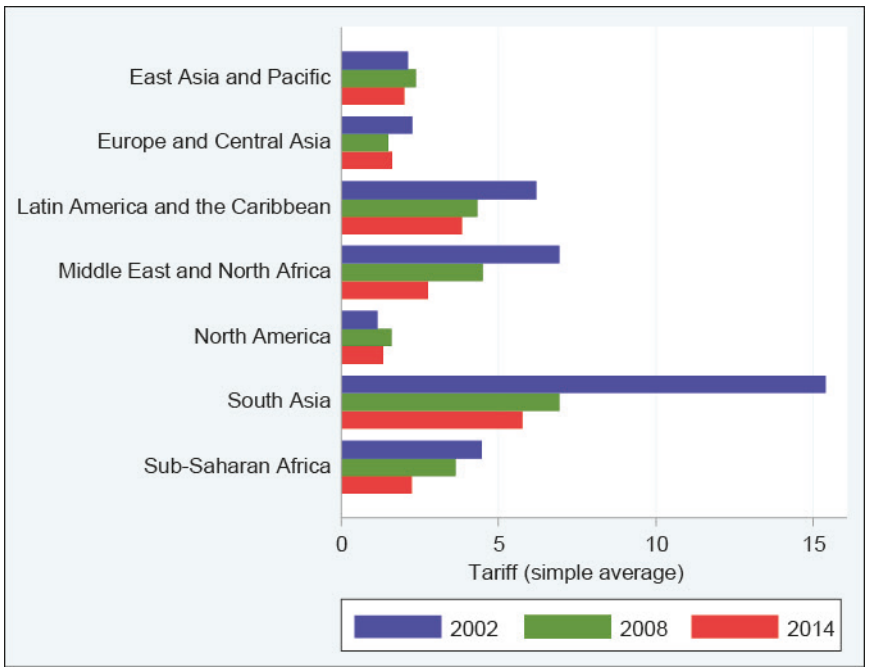
To assess the barrier stemming from tariffs, we first downloaded the latest applied Most Favored Nation (MFN) tariffs for the six commodity introduced above for 160 countries. The simple averages of the applied MFN tariff across all countries for the six commodity groups are presented in Figure 4. At this level of aggregation, we observe that the average tariffs are rather low, ranging between 2.8% and 4.4%. However, the simple average hides substantial difference across regions, across countries, and across individual products. In a second step, we therefore look at seven different regions.

Figure 4: Applied Most Favored Nation Tariff on Health Product Groups



Note: Tariff data based on latest available year, but not older than 2010.
Source: Authors.

Figure 5: Applied Most Favored Nation Tariff on Health Product Groups by World Region



Note: Tariff data based on latest available year, but not older than 2010.
Source: Authors.

Average applied tariff MFN rates, by World Bank developing region, are presented in Figure 5. It is important to emphasize that these are statutory tariff rates that apply to everyday imports of health-related products. In cases of emergency relief, countries typically do not levy customs duties on incoming supplies. So the focus here is on policies that can affect the general level of health and health-care service provision in a country in ordinary times, not emergencies. We note that the tariffs have been coming down in the past years. On average, the most protected developing region is South Asia. Although the average tariff is relatively low, at about 8% for pharmaceuticals and 6% for medical instruments, it seems difficult to justify at all on development grounds, as discussed earlier.

On average, tariff rates on pharmaceuticals and medical equipment are relatively low, and a wide range of countries allow duty-free access. However, the fact that tariffs persist at all is puzzling in light of the importance of ensuring access to affordable medicines for poor people. From a political economy perspective, it would be important to know what forces in some developing countries align to prevent the entry of low-cost health products from the world market. In some cases, it is likely infant industries. But there also appear to be countries that levy tariffs on imported medicines even though they do not have significant domestic capacity.

Moreover, the regional averages conceal considerable variation across countries. The two largest countries in South Asia also have the highest tariffs: India at 10% and Pakistan at 12%. In the case of India, protection of the domestic pharmaceuticals industry is one possible political economy explanation for the existence of this significant import tax. However, that industry is already globally competitive and seems to have little need of protection on infant industry grounds. Countries in other regions, often without significant domestic manufacturing capacity, also impose significant tariffs on pharmaceuticals. Examples include Tunisia and Djibouti (11%), Ghana (9%), and the Lao People's Democratic Republic (8%).

In most regions, average tariff rates on medical equipment are lower than for pharmaceuticals. However, the averages again mask considerable cross-country variation: in fact, the countries with the highest tariffs in this sector apply them at levels that far exceed those for pharmaceuticals. For example, Djibouti taxes foreign medical instruments at an average rate of 24%, Iran applies a 14% tariff, and rates in the next 10 most protected countries (covering five of the six World Bank regions) are approximately 10%. There are undoubtedly political economy motivations for these tariffs in each country, in addition to possible revenue-raising objectives.

To have a more detailed looked at the tariff levels of health products, we study the tariffs at the highest level of disaggregation, 6 digit HS. For our analysis, we look at the latest available tariff (but not older than 2010) of 158 countries in 190 health products. Out of the possible 30,020 observations, we are able to gather 20,486 tariff lines. In Table 1, we measure the percentage of tariff lines that are equal or above a certain level. We observe that on less than 55% of all tariff lines are import duties of less than 5% levied. On more than 13% of all tariff lines, the import duties are still above 10% and on almost 5% of the tariffs lines, we found rates above 15%.

Table 1: Percentage of Tariff Lines Protected with High Import Duties

	Percentage of Tariff Lines with a Tariff of …			
Tariff level	0%	5%≤10%	10%≤15%	<15%
% of tariff lines	49.0%	27.6%	7.3%	2.1%

Note: Tariff data based on latest available year, but not older than 2010.
Source: Authors.

To know the countries that still maintain high tariffs on health products, we counted the number of countries that have at least half of their tariff lines above a certain threshold of import duties. Table 2 presents the results. In our sample, 25 countries impose on at least half of their health products import duties of above 5%. Among these countries, we find a few advanced economies such as Chile and the Republic of Korea. Furthermore, the list includes two large countries: Brazil and India. However, most of the countries are among the poorest in the world, including several least-developed countries in Africa and Asia. Table 2 also presents the results when the cutoff of 10%, 15%, and 20% is applied. Logically, the number of countries falls. In the last column,

we see that the Bahamas, Djibouti, and Bermuda are the countries with the highest protection of health products.

Table 2: Countries with High Applied Tariffs on Health Products

Country Name	Applied Tariff (simple average)	Country Name	Applied Tariff (simple average)
The Bahamas	25.9	Congo, Democratic Republic of the	6.3
Djibouti	20.0	Central African Republic	6.3
Bermuda	15.1	Brazil	6.1
Anguila	14.8	Algeria	6.0
Iran, Islamic Republic of	12.2	Chad	6.0
Maldives	10.8	Argentina	6.0
Ghana	10.0	The Gambia	5.9
Cuba	8.1	Sierra Leone	5.7
India	8.0	Venezuela	5.7
Ethiopia	7.7	French Polynesia	5.4
Aruba	7.6	Uzbekistan	5.4
Nepal	6.8	Bangladesh	5.2
Cameroon	6.8	Samoa	5.2
Pakistan	6.7	Lao People's Democratic Republic	5.1

Source: Authors.

Table 3: Most Protected Products with Applied Tariffs Above 10% by Number of Countries

Product Code	Product Description	Number of Countries with Applied Tariff above 10%
900630	Cameras for medical or surgical examination (or other purposes)	54
940210	Dentists', barbers', or similar chairs and parts thereof	48
940290	Other medical, surgical, dental, or veterinary furniture	32
401511	Surgical gloves of vulcanized rubber	30
300692	Waste pharmaceuticals	30
701720	Laboratory, hygienic, or pharmaceutical glassware	25
290410	Sulfonated derivatives of hydrocarbons	25
701790	Other laboratory, hygienic, or pharmaceutical glassware	23
401490	Other hygienic or pharmaceutical articles of vulcanized rubber	23

Source: Authors.

The analysis allowed us to better gauge the distribution of the applied tariffs as well as to know the countries that maintain the highest tariff levels. To know the products that are subject to the highest protection, we looked at all health products with above 10% applied tariffs. In Table 3, we count the number of countries that have tariffs above 10% and show the nine most protected goods. For example, our data reveals that, in 30 countries, for importing surgical gloves of vulcanized rubber, import duties of more than 10% need to be paid. The most protected health products are cameras for medical or surgical examination. (This HS subheading also covers cameras for underwater and aerial survey as well as comparison cameras for forensic or criminological purposes. All these additional purposes probably account, in most countries, for a small share compared with cameras used for medical or surgical purposes.)

In Tables 4 and 5, we highlight two product groups with particularly high tariffs: surgical gloves and cameras for medical or surgical examinations. Nineteen countries levy applied tariffs of 20% or more on surgical gloves. It is difficult to see which of these countries could have an interest in protecting a domestic industry of surgical gloves, as several of the countries are small economies with small industrial bases. For health care, surgical rubber gloves are heavily used and thus constitute an important input. Lowering the tariffs for rubber gloves could therefore make a direct contribution to lower health-care costs.

Cameras for medical or surgical examination of internal organs are another example of health products with high tariffs. The list of countries with applied tariffs exceeding 20% includes 46 countries, of which almost 20 are least-developed countries. The less developed and least-developed countries, in particular, have no domestic industry that might compete with imports. Levying high tariffs is a direct burden for public health.

We have just examined several specific types of health-related products, albeit important ones. The findings are symptomatic of a more general problem: activist trade policies that insulate countries from world markets can push up prices and limit availability of important development products, i.e., goods that play a particular role in promoting the SDGs other than through income channels. Trade can be a lever to promote non-income objectives in the SDGs such as the health goals of SDG 3.

Table 4: Countries with an Applied Most Favored Nation Tariff of 20% or More on Surgical Gloves of Vulcanized Rubber (Harmonized System Code 401511)

Algeria	Maldives
The Bahamas	Namibia
Botswana	Pakistan
Congo, Rep. of the	Samoa
Djibouti	South Africa
Fiji	Swaziland
The Gambia	Tonga
Iran, Islamic Rep. of	Tuvalu
Jordan	Viet Nam
Lesotho	

Note: Least-developed countries in bold.

Source: Authors.

Table 5: Countries with an Applied Most Favored Nation Tariff of 20% or More on Specially Designed Cameras (Harmonized System Code 900630)

Algeria	Guyana
Anguila	Jamaica
Antigua and Barbuda	Liberia
The Bahamas	Madagascar
Barbados	Mali
Belize	Mauritania
Benin	Montserrat
Burkina Faso	Mozambique
Cambodia	Niger
Cameroon	Nigeria
Central African Republic	Samoa
Chad	Senegal
Congo, Dem. Rep. of the	Sierra Leone
Congo, Rep. of the	St. Kitts and Nevis
Cote d'Ivoire	St. Lucia
Cuba	St. Vincent and the Grenadines
Djibouti	Sudan
Dominica	Suriname
Fm Sudan	Syrian Arab Republic
Ghana	Togo
Grenada	Tonga
Guinea	Trinidad and Tobago
Guinea-Bissau	Uzbekistan

Notes: These comprise cameras specially designed for underwater use, for aerial survey, or for medical or surgical examination of internal organs; and comparison cameras for forensic or criminological purposes (Harmonized System Code 900630). Least-developed countries in bold.

Source: Authors.

2.3 Nontariff Measures for Health Products

NTMs refer to measures other than import duties which can affect market access. Examples are technical regulations, product standards, or pre-shipment inspections. Health products are typically subject to numerous NTMs, most prominently product registration and approval, as they have the potential to directly impact health. If appropriately designed and implemented, such NTMs can further important public policy objectives such as ensuring consumer safety and promoting public health. Our intention is not to suggest that they be rolled back, but instead to highlight their prevalence and to highlight the need for detailed assessments of the costs and benefits of different regulatory options.

NTMs are notoriously difficult to measure and quantify. In 2009, a group of technical experts from various international organizations developed a classification of 16 chapters, ranging from technical regulations (chapter 1), conformity assessments (chapter 2), pre-shipment inspections (chapter 3), to rules of origin (chapter 15) and export-related measures (chapter 16). The data collection effort is still under way, and results are currently available for a small number of developing countries only. Nonetheless, we review them in this paper. We also address some previous work that looks directly at the health sector.

One of the rare surveys that studies NTMs was undertaken by the International Trade Center in 2010 (International Trade Center 2011), focusing on antimalarial products. The survey was based on phone interviews with 29 importers and 6 exporters of antimalarial products in mostly developing countries. Even though the sample size is rather small, the results clearly show that NTMs are a major obstacle for international trade in health products. The authors found that 60% of interviewees faced burdensome NTMs; only nongovernment organizations and international organizations did not report major NTMs. The most commonly reported NTM related to product registration and inspection requirements. Almost half of NTMs were perceived as burdensome because of delays in administrative procedures, high fees and charges, as well as lack of transparency and necessity for bribes. Several cases were reported in which the product registration took several months or even 1 year. Inspection at customs seems to take a long time due to congestion in the port and insufficient capacity of customs. Furthermore, many respondents reported that additional charges and taxes other than customs duties had to be paid, ranging between 5% and 10%. Finally, high transportation costs between or within countries increase costs of drugs. The International Trade Center's survey on antimalarial drugs illustrates how NTMs add substantially to the final price of health products.

More anecdotal evidence for NTMs comes from different country cases. For example, Nigeria bans the import of various pharmaceutical products. The ad valorem tariff in that case is effectively infinite on the covered products. Of particular concern is the fact that the prohibition list includes chloroquine, a drug used in the prevention and treatment of malaria, as well as various antibiotics and deworming treatments. All of these products have special significance in terms of health outcomes in a developing country like Nigeria. The rationale for the import bans is unclear, but there is likely to be a political economy motivation.

Mehta (2005) reports findings based on interviews with 10 pharmaceutical enterprises in India. The firms produced bulk drugs (intermediates and active pharmaceutical ingredients, A2 in our classification) and finished formulations in various dosage forms (A1 in our classification). They exported to developed countries and developing countries. The firms seemed to suffer from various kinds of NTMs in overseas markets, including company registration, product registration, World Health Organization–Good Manufacturing Practice certification, packaging and labeling requirements, import bans, antidumping measures, and pre-shipment inspection. The incidence of NTMs varied across export markets. In developed countries, pharmaceutical producers in India were mainly confronted with one main type of NTM (company and product registration), while in developing and transition economies, various NTMs had to be overcome. Furthermore, the companies reported that compliance with NTMs involved considerable financial costs and time. It is important to stress that although some of these NTMs may have legitimate public policy objectives, others, like import bans and antidumping duties, are firmly rooted in the protection of markets, not people.

The newly updated, though only partially complete, the United Nations Conference on Trade and Development (UNCTAD) Trade Analysis Information System (TRAINS) database makes it possible to give more systematic insights into these kinds of questions. We take the example of pharmaceutical products as the most useful implementation of new data, the NTM-Map database is organized at the two-digit level. Of course, pharmaceuticals are heavily regulated in most jurisdictions, and important public policy objectives are furthered by many such regulations. Nonetheless, the prevalence of NTMs is striking. Taking the sector as a whole, 32 of the covered countries report that 100% of pharmaceutical imports are covered by some kind of NTM. Only 13 report a coverage ratio of less than 100%. Of those 13, coverage ratios

range from 1% in Cote d'Ivoire to just under 100% in Uruguay, with typical numbers in excess of 50%. This preliminary analysis indicates that NTMs are very common in most countries in the pharmaceuticals sector.

It is important to look at the type of NTMs being used, however. Some may be important for public health and consumer protection, at least if well administered, while others may be more protectionist in intent. NTM-Map database distinguishes five types of NTMs: sanitary and phytosanitary measures (SPS), technical barriers to trade (TBTs), customs formalities, contingent protection (antidumping, safeguards, and countervailing duties), and quantity control measures (such as licenses and quotas). Of these, clearly the first two are potentially the most relevant to issues such as consumer protection.

Table 6 presents a breakdown of each economy's NTMs, showing coverage ratios for the five categories identified in the previous paragraph. SPS and TBT measures are typically the most prevalent, which could be in line with the public interest if the measures are appropriately designed and administered. Indeed, the absence of these measures in some countries (such as Cote d'Ivoire, Guatemala, and Senegal) is a cause for concern. There need to be adequate quality controls in place to ensure that pharmaceuticals, whether locally produced or imported, are safe and effective.

The other categories of NTMs are more troubling from an access and efficiency point of view. Quantity controls, such as licenses and quotas, are applied by a number of countries. Although licensing may be appropriate as a way of ensuring quality control, the risk is that quantity control measures can be used to protect the domestic market for incumbents, or reduce efficiency and access considerably. This area is perhaps one that needs attention going forward. Customs formalities also stand out in some countries. In line with recent advances in trade facilitation, there is a clear rationale for streamlining customs formalities. Although administration of SPS and TBT measures may require some additional formalities at the border, they should be kept as light as possible. Finally, Pakistan stands out for its extensive use of contingent protection measures against foreign pharmaceuticals. There is no public health rationale for these NTMs, and they are much more likely to be protectionist in intent and effect.

Table 6: Percentage of Imports by Value Affected by Listed Nontariff Measures, latest available year, World Integrated Trade Solution – Trade Analysis Information System

	SPS (%)	**TBT** (%)	**Customs** (%)	**Contingent Protection** (%)	**Quantity Control** (%)
Afghanistan	0	100	0	0	31
Argentina	96	100	97	0	100
Benin	0	85	85	0	100
Bolivia	78	100	0	0	0
Brazil	100	100	54	0	100
Burkina Faso	100	74	100	0	0
Cape Verde	0	100	0	0	100
Chile	86	100	64	0	0
China, People's Republic of	0	100	0	0	66
Colombia	91	100	14	0	100
Croatia	16	100	5	0	2

continued on next page

Table 6 *continued*

	SPS (%)	**TBT** (%)	**Customs** (%)	**Contingent Protection** (%)	**Quantity Control** (%)
Cuba	40	61	0	0	61
Côte d'Ivoire	0	0	1	0	0
Ecuador	81	100	0	0	0
El Salvador	100	100	0	0	0
Estonia	19	100	8	0	2
European Union	28	100	4	0	1
Gambia	0	100	0	0	0
Ghana	100	100	100	0	0
Guatemala	0	0	0	0	0
Guinea	100	100	100	0	0
Honduras	73	0	0	0	0
Hong Kong, China	11	100	0	0	11
India	70	100	0	1	0
Kazakhstan	100	99	0	0	75
Malawi	0	100	0	0	0
Mali	74	100	100	0	100
Mexico	100	100	0	0	0
Nepal	100	100	0	0	0
Nicaragua	1	100	0	0	0
Niger	0	92	100	0	100
Nigeria	0	100	98	0	83
Pakistan	0	96	0	39	100
Panama	3	95	0	0	0
Paraguay	94	95	55	0	0
Peru	89	93	0	0	6
Russian Federation	0	100	100	0	100
Rwanda	100	100	0	0	100
Senegal	2	0	100	0	0
Sri Lanka	100	100	100	0	0
Tajikistan	100	100	0	0	1
Togo	0	89	0	0	0
Turkey	100	96	0	0	0
Uruguay	57	100	40	0	54
Venezuela	83	99	0	0	0

SPS = sanitary and phytosanitary measures, TBT = technical barrier to trade.

Source: Authors.

Even though we lack systematic empirical evidence on NTMs for health products in all countries, the studies demonstrate the importance of NTMs. It seems that health products in developing countries are subject to these additional trade barriers. The presence of numerous NTMs translates into additional large costs for importers and patients. We conjecture that import duties are only a small fraction of the costs that are involved in importing health products. To ease trade in health products, the reduction of NTMs is as important as tariff elimination.

Overall, we have strong evidence that tariffs and NTMs both considerably undercut some countries' ability to move forward on SDG 3. The effect of tariffs and NTMs on health products is to push prices up, and limit availability on the domestic market. There is no health rationale for putting in place tariffs that make it harder for consumers to access important health-related goods. Indeed, the opposite is true: increased openness would undoubtedly result in lower prices and improved availability, which would help promote improved health outcomes. Some NTMs might be justified to protect public health. However, many NTMs seem to be more burdensome than necessary, and even necessary NTMs need to be administered in an efficient and transparent way. As a result, access to health products is more expensive, delayed, or impossible. We still lack systematic data to quantify combined impact of tariffs and unnecessary NTMs. However, we can certainly state that both significantly hinder access to health products and are thus bad for health.

3. CASE STUDY 1: VACCINES

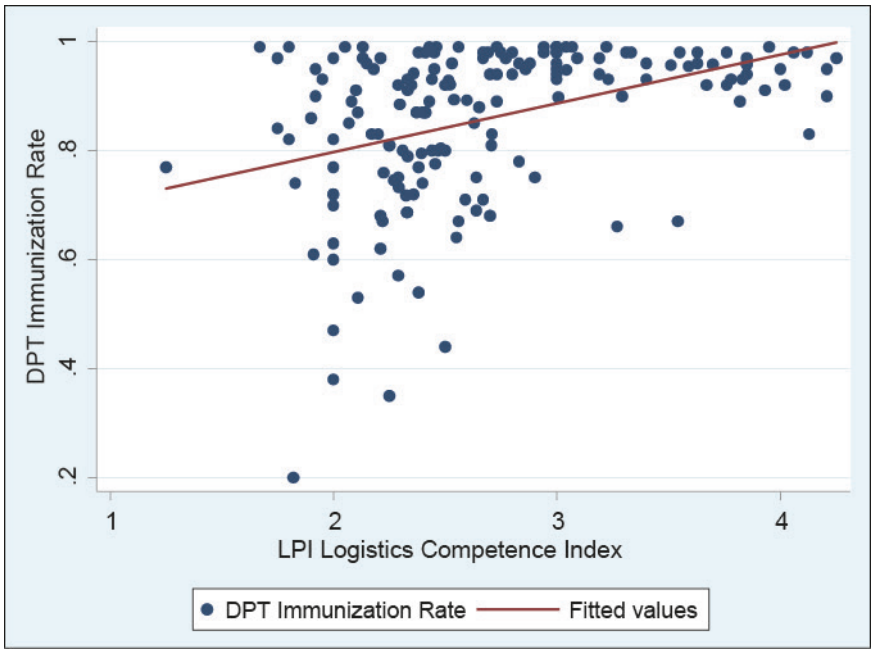
The previous section showed that a variety of countries continue to apply active trade policies to health-related products, and it argued that the result would be to decrease availability and increase cost, which is a negative outcome in terms of SDG 3. So what do the data say about trade policy and health outcomes? This section provides some basic exploratory analysis, focusing on example of vaccines.

The lens for looking at trade and vaccination rates as a health outcome is logistics, an internationally traded service.[1] The rationale for expecting a connection between the two is that vaccines require careful handling if they are to be moved from port or factory to the hinterland in a usable state. To measure trade policy, the World Bank's Logistics Performance Index (LPI) is used, specifically the subindex measuring the competence and quality of logistics services—a variable that should be linked to trade policy. Results are presented using the immunization rate for diphtheria, pertussis, and tetanus, but similar conclusions follow if the measles immunization rate is used instead.

Figure 6 shows the association between the two variables. The line of best fit is upward sloping, in line with the contention that better logistics and trade facilitation performance is associated with better handling of vaccines, which in turn increases the immunization rate. The association is statistically significant at the 1% level ($R^2 = 0.16$). Moreover, the association between these two variables remains strong even when confounding influences are accounted for. Shepherd and Pasadilla (2011) report results from an OLS regression of the immunization rate on the LPI logistics competence index, with a set of control variables including per capita gross domestic product (GDP), the percentage of GDP spent on health, and an index of government effectiveness from the World Governance Indicators. The coefficient on the LPI remains statistically significant at the 1% level. In addition, an interaction term with per capita GDP is negative, which indicates that the association between logistics performance and the vaccination rate is stronger in lower-income countries. These results hold even if a dummy is introduced for Sub-Saharan African countries, the region where vaccination is most problematic and logistics weakest. The evidence in this case connecting better trade policy—in this case improved logistics and trade facilitation—with improved health outcomes in terms of SDG 3 is strong.

[1] This section draws on B. Shepherd and G. Pasadilla. 2011. Trade in Services and Human Development: A First Look at the Links. In P. Sauve, G. Pasadilla, and M. Mikic, eds. *Service Sector Reforms: Asia-Pacific Perspectives*. Tokyo: Asian Development Bank Institute.

Figure 6: Correlation between Logistics Competence and Diphtheria, Pertussis, and Tetanus Immunization Rate, latest available year



DPT = diphtheria, pertussis, and tetanus; LPI = Logistics Performance Index of the World Bank.
Source: Shepherd and Pasadilla (2011).

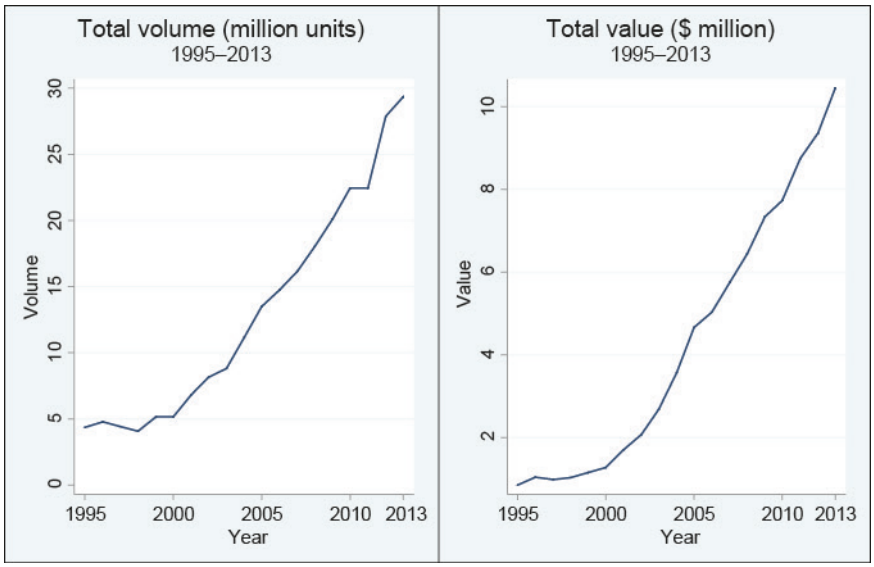
4. CASE STUDY 2: INSULIN

Trade openness is typically a necessary, but not sufficient, condition to ensure that prices are lower compared with a closed regime. In the field of pharmaceuticals, prices are often regulated and/or the pharmaceutical companies enjoy monopoly power. In this subsection, we would like to study the case of insulin, which is the main drug to counter diabetes. As diabetes has become a major public health problem around the world, insulin trade has also increased rapidly. In contrast to most other drugs, insulin has two dedicated HS subheadings. Most insulin products are traded under HS 300331 "medicaments containing insulin (not in measured doses or put up for retail sale)." HS 300431 covers medicaments containing insulin put in packings for retail sale, for which international trade is more than 99% (in value terms) compared with international trade of HS 300331. For our analysis, we will therefore only study trade flows and tariffs for HS 300431.

As we can see in Figure 7, trade in insulin has increased drastically over the last 2 decades, both in terms of volume (kilogram) and value (US$). The expansion is particularly marked after 2000.

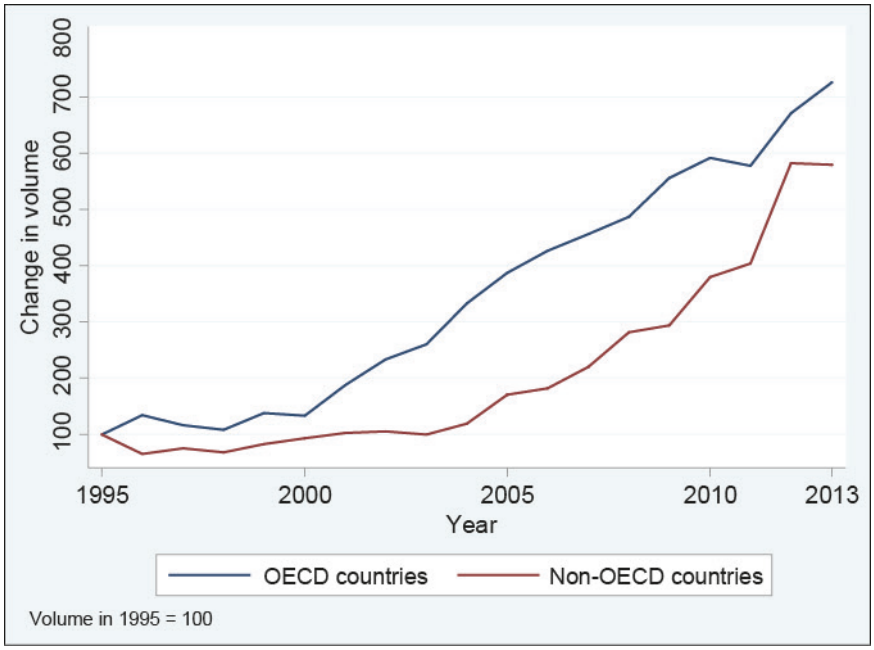
Figure 8 illustrates the import values of medicaments containing insulin among Organisation for Economic Co-operation and Development (OECD) countries and non-OECD countries, setting the value in 1995 as 100. The need for insulin appears to be growing in both country groups. However, whereas OECD countries started to import much more from 2000 onward, non-OECD countries followed only a few years later. From 2000 to 2013, insulin imported in value terms by OECD countries grew by 13.96% annually while that imported by non-OECD countries grew by 15.05%.

Figure 7: Evolution of Volumes and Values of Harmonized System Code 300431, 1995–2013



Source: Helble and Aizawa (2016).

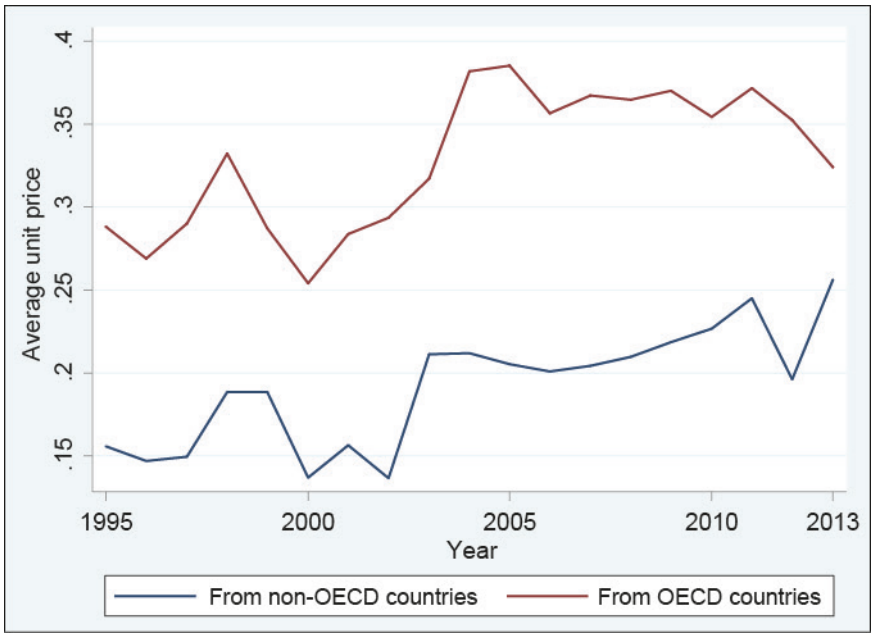
Figure 8: Evolution of Imports of Harmonized System Code 300431
($, indexed to 1995 = 100)



OECD = Organisation for Economic Co-operation and Development.
Source: Helble and Aizawa (2016).

The global insulin market is dominated by three major pharmaceutical companies: Novo Nordisk, Eli Lilly, and Sanofi-Aventis. However, more and more local manufacturers in off-patent countries have become active in the market, especially in the People's Republic of China, India, and the Russian Federation. The insulin medicines produced by different producers yield comparable health outcomes. However, the prices charged by different producers and across countries differ considerably. Figure 9 shows the evolution of the average landed unit prices[2] for HS 300431 coming from OECD countries and non-OECD countries. We observe that the price for insulin imported from OECD countries is substantially and continuously higher compared with the price levied by producers in non-OECD countries.

Figure 9: Evolution of Average Import Unit Prices of Harmonized System Code 300431, 1995–2013
(simple average)



OECD = Organisation for Economic Co-operation and Development.
Source: Helble and Aizawa (2016).

The source of the traded insulin, however, is only one determinant of the price. Helble and Aizawa (2016) analyze the trade and prices of insulin for 186 importing countries between 1995 and 2013 and study various determinants explaining the price differences across countries and years. The authors find that pharmaceutical companies systematically apply price discrimination. In other words, the higher the national income per capita, the higher the price for insulin. More interestingly, the authors find evidence that market forces attenuate the potential for discriminating prices fully. Their study shows that the greater the number of sources a country uses to import insulin and the larger the volume, the lower the price tends to be. In addition, institutional factors seem to play a role. In countries where most of the expenditure is out-of-pocket, prices seem to be higher, indicating that atomistic buyers have less negotiating power. Finally, lower tariffs appear to have a significant effect on prices.

[2] The unit price is defined as the ratio between value and weight. In the case of insulin, the weight is in kilograms. Unit values are commonly used in the trade literature as a proxy for prices per unit.

Overall, the study shows that trade has become a vital instrument to fight diabetes insulin across the world. However, an open trade regime is not enough to guarantee low prices. Pharmaceutical companies often attempt to discriminate prices according to income levels. Governments can counteract by enlarging the pool of source countries and by building up health systems that lower out-of-pocket payments. This example shows that trade can be an important force in promoting improved health outcomes, but it of course cannot succeed alone. General health policy is of course vital. The key, as explored in this paper, is in getting the two to work productively together.

5. CONCLUSION AND POLICY IMPLICATIONS

This paper has provided a first look at one important non-income linkage from a more open trading system to the SDGs, specifically SDG 3, which deals with health. There is clear evidence that developing countries apply tariffs and NTMs that have the effect of increasing prices and decreasing availability of health-related products such as pharmaceuticals, vaccines, and medical equipment. The case for liberalizing trade in these products is strong. In addition, there is compelling evidence that improving trade facilitation performance—using the WTO's Trade Facilitation Agreement as a starting point—could be linked to improved handling of health-related products such as vaccines, which in turn would boost usage. The case of insulin showed that trade is key for the supply of insulin to patients across the world. Studying the price differences across countries, we observed that the price of insulin has various determinants. Pharmaceutical companies typically charge higher prices in markets with higher per capita income. The level of competition and size of the market are additional factors that influence the final price. Government can try to leverage the competition between manufacturers as well as their purchasing power to bring down the price of insulin. Building up health systems that lower out-of-pocket payments is another option to make insulin more affordable to patients.

One area of tension for trade and health outcomes is the protection of intellectual property rights. That protection can promote innovation by pharmaceutical companies, which, in turn, can improve patient outcomes. However, market size effects combined with the very high development costs for new medications mean that even strong protection of intellectual property rights has proved insufficient to generate treatments for some common developing country ailments like malaria. However, private sector funding through foundations is changing that position somewhat, by providing incentives for development-relevant drug research.

It is important to remember that the principal constraint in terms of improving people's health in developing countries is the weakness of the health services sector and delivery systems. For many conditions, medicines are available and off-patent, which means they can be produced quite cheaply, including by developing country manufacturers of generics in countries such as India and Brazil. Facilitating the movement of generic drugs to poorer developing countries is an important health policy objective, but one that needs to be backed up by public and private sector spending on health care, including through the development of delivery infrastructure and professional services. We therefore need to stress the importance of complementary policies such as infrastructure and human resources development, as an adjunct to a liberal trade policy in relation to health products.

Although trade has a relatively low profile in the SDGs and their companion targets, it is by no means absent from the package of measures available to policy makers to promote the SDGs. Trade economists need to do more to show that trade can benefit sustainable development through non-income channels. Work on liberalization of environmental goods and services is another important example from outside health: by the same reasoning as was presented here, liberalization in these sectors can directly help achieve the SDGs by promoting sustainability. Future policy research could usefully concentrate on identifying more examples like health and the environment—areas in which trade can promote sustainable development through non-income channels. Similarly, analysts in other areas featured more prominently in the SDGs should be looking to include trade in the conversation on how best to promote sustainable and inclusive growth.

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